

Claims

1. A fuel cell power plant comprising:
a fuel cell stack having electric power output lines;
a source of fuel connected to said fuel cell stack;
said electric output power lines connected to either (a) a load
5 or (b) a power conditioning system feeding a load;
a controller, said controller controlling supplied fuel to said
fuel cell stack;
an electric energy storage device either (c) connected directly
in parallel with said fuel cell stack between said electric output power
10 lines so that the voltage of said fuel cell stack always follows the
voltage between said electric output power lines and is always
substantially the same voltage as the voltage between said electric
output power lines, or (d) connected to a DC/DC converter, said
DC/DC converter and said electric energy storage device being
15 connected in series between said electric output power lines.
2. A power plant according to claim 1 wherein:
said energy storage device is one or more supercapacitors.
3. A power plant according to claim 1 wherein:
said energy storage devices is one or more batteries.
4. A fuel cell power plant providing power to a load
having a fuel cell stack with electric output power lines comprising:
an electric energy storage device associated with said fuel
cell stack;

5 means for providing a voltage to said electric energy storage device which is always either (a) substantially a multiple or (b) substantially a fraction of the voltage between said electric output power lines; and

means for controlling the voltage provided to said electric
10 energy storage device in response to a voltage related to said load.

5. A method of operating a fuel cell power plant having a fuel cell stack with electric output power lines providing power to a load and an electric energy storage device associated with said fuel cell stack, said method comprising:

5 providing a voltage to said electric energy storage device which is always either (a) substantially a multiple or (b) substantially a fraction of the voltage between said electric output power lines; and

controlling the voltage provided to said electric energy
10 storage device in response to a voltage related to said load.

6. A method according to claim 5 wherein:
said controlling step comprises (c) increasing or (d) decreasing said voltage provided to said electric storage device above or below said multiple or said fraction to increase response of said
5 electric storage device to load transients.

7. A method of operating a fuel cell power plant providing power to a load having a fuel cell stack with electric output power lines and an electric energy storage device associated with said fuel cell stack, said method comprising:

5 connecting said electric energy storage device directly
between said electric output power lines in parallel with said fuel cell
stack; and

 allowing the voltage of said electric energy storage device to
follow the voltage across said electric output power lines, whereby
10 the voltage of said electric storage device always follows the voltage
between said electric output power lines and is always substantially
the same voltage as the voltage between said electric output power
lines.